Patrick Kiel

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SUMMARY OF RESEARCH INTERESTS

- Coral Reef Ecology, Coral Physiology, Global Climate Change, Ecosystem Services, Coastal Resilience, Phenotype Plasticity, Acclimatization, and Adaptation

EDUCATION

Bachelor of Science in Marine and Atmospheric Science, May 2020
University of Miami, Coral Gables, FL

- Majors: Marine Science and Biology
- Thesis: Examining structural and mechanical properties of the threatened coral *Acropora cervicornis*: Effects of nursery grow-out platforms on mechanical strength
- Study Abroad: UGalapagos - International Outreach Initiative, Isabela, Galapagos Islands, Spring 2019

RESEARCH

NOAA Research Associate I Intern October 2020 - Present
AOML Coral Program
Supervisor: Dr. Ian Enochs, Nathan Formell

- Developed *Acropora cervicornis* phenotypic response database connecting disparate datasets to identify resilient genotypes and inform restoration practitioners conducting coral relocation efforts
- Supported diverse projects within the AOML Coral Program and Experimental Reef Laboratory investigating coral disease, ocean acidification, heterotrophy, and holobiont thermal tolerance
- Designed processing code in R for automated incubation chambers designed to rapidly asses coral physiology and calcification

Undergraduate Research Assistant and Scientific Diver September 2018 - May 2020
Lirman Benthic Ecology and Coral Restoration Lab, University of Miami
Supervisor: Dr. Diego Lirman, Jane V. Carrick

- Led independent research project investigating mechanical strength of coral skeletons and role of coral restoration to increase wave attenuation of degraded reefs to support coastal resilience
- Conducted field research as part of IBBEAM, AGGRA, and coral restoration projects in Miami-Dade County
- Collaborated with diverse team of researchers and graduate students conducting research projects and ecological assessments of reefs and seagrass beds in South Florida

Undergraduate Research Assistant August 2017 - May 2019
Langdon Ocean Acidification Lab, University of Miami
Supervisor: Dr. Chris Langdon

- Analyzed *Acropora cervicornis* under experimental ocean acidification conditions to determine effects on calcification rate, tissue lipid content, symbiont density, and chlorophyll-*a* concentration
- Maintained coral mesocosms
- Collected and analyzed seawater samples of experimental aquariums

COMMUNITY OUTREACH

Coral Restoration Educator May 2019 - present
Rescue a Reef, Miami, FL

- Taught citizen scientists coral restoration principles and techniques during field excursions
- Communicated economic and social value of coral reefs to the public in outreach events and lab tours

President May 2019 - April 2020

University of Miami Scuba Club, Coral Gables, FL

- Organized twice-weekly dive trips, training courses, and managed gear procurement and maintenance for membership of 400+ students, faculty, and alumni.
- Worked closely with University officials to obtain $60,000 in annual funding and ensured proper risk management and dive safety policies.
- Previously held roles: Dive Safety Officer (2016-2017), Treasurer (2017-2018), Vice President (2018-2019)

Divemaster May 2017 - August 2018

Florida National High Adventure Sea Base, Boy Scouts of America, Islamorada, FL

- Guided divers between the ages of 14-18 around local reefs and instilled safe diving practices
- Revised seminar curriculum and taught local ecology, fish and coral identification to a public audience
- Additional responsibilities included dive equipment maintenance, boat handling, boat maintenance

SKILLS

Research Skills

- Analytical water chemistry (spectrometric pH, DIC, dissolved oxygen, nutrients)
- Calibration, implementation, and analysis of coral reef water quality (tilt current meters, PAR sensors, Sub-surface Automated Samplers, HOBO pendant loggers, SeaBird Moored CTD)
- Maintenance of microcosms and mesocosms
- Incubations of corals to understand physiology and calcification under sublethal stress

Software

- R, MySQL, Microsoft Office Suite, Adobe Creative Suite, Web Design (HTML, CSS, JavaScript) FlexScan 3-D Scanning, Agisoft Metashape, ArcGIS, CPCe, ImageJ

Diving and Marine Operations

- Scientific Diver, University of Miami (AAUS)
- MOCC Small Boat Operator
- Divemaster and Rescue Diver, Professional Association of Diving Instructors
- Rebreather/DPV/Trimix Cave Diver, Technical Diving International
- Professional First Aid/CPR/AED Certifications, Divers Alert Network/Red Cross
- Emergency Oxygen Provider, Divers Alert Network/Professional Association of Diving Instructors

AWARDS & RECOGNITIONS

- Dr. Linda Farmer Undergraduate Research Award, $2,500
- University of Miami Eco Agency Programming Grant for Coral Restoration, $1,500

PRESENTATIONS

- **Kiel PM**, Carrick JV, Ramanathan S, Suraneni P, Rhode-Barbarigos L, Lirman D (2020, April 7-11) Structural resilience of nursery-reared *Acropora cervicornis* - A comparison of grow-out platforms. 49th Benthic Ecology Meeting, Wilmington, NC. **Oral Presentation** *Canceled due to COVID-19

- **Kiel PM**, Carrick JV, Ramanathan S, Suraneni P, Rhode-Barbarigos L, Lirman D (2020, April 28) Examining structural and mechanical properties of the threatened coral Acropora cervicornis: Effects of nursery grow-out platforms on mechanical strength. 2020 Rosenstiel Undergraduate Research Symposium (RURS), Miami, FL. **Poster Presentation**

REFERENCES

1) **Dr. Ian Enochs -** ian.enochs@noaa.gov
2) **Dr. Diego Lirman** - dlirman@rsmas.miami.edu
3) **Nate Formel** - nathan.formel@noaa.gov
4) **Jane Carrick** - jvcarrick12@gmail.com
5) **Dr. Prannoy Suraneni** - suranenip@miami.edu